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Rectovaginal Fistula Following Low Circular Stapled Anastomosis in Women With Rectal Cancer

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Low anastomosis using a circular stapling instrument has become standard for performing a colorectal reconstruction following resection of a rectal cancer. Often these anastomoses are performed deep in the pelvis using a circular stapling instrument without clear visualization of the anastomotic site. In the female patient, unless an adequate stump of rectum is left above the circular staple line, there is danger that the side wall of the posterior aspect of the vagina can be included in the tissue rings (donuts) that are resected by the circular stapling instrument. This leaves the patient at high risk for late development of a rectovaginal fistula by vaginal mucosa being incorporated into the rectal wall. Maintenance of an adequate stump beyond the linear staple line and a vaginal examination prior to firing the circular stapler will prevent this problem. A patient is presented and the technical details for a safe low-low colorectal anastomosis are reviewed.

KEY WORDS: **rectal cancer, rectovaginal fistula, circular stapled anastomosis**

INTRODUCTION

A great majority of anovaginal and rectovaginal fistulas occur as a result of trauma to the vagina during childbirth. Mazier et al. [1] reported 77 of 95 fistulas they repaired to be from obstetric injury. Persistent infection in the lower rectum, especially in the anal crypts, may eventuate in rectal vaginal fistula. This is often associated with Crohn's disease [2–5] or ulcerative colitis [6] but may have more obscure causes such as trichomonads [7] or amoebic dysentery [8] and persistent and severe fecal impaction [9]. An unusual cause is Behcet's syndrome. In patients with rheumatoid arthritis, severe proctitis may progress to rectovaginal fistula [10].

Anovaginal and rectovaginal fistulas have been reported following low coloanal or colorectal anastomosis [11,12]. This may occur more frequently in patients who have had preoperative radiation therapy for rectal cancer. Rex and Khubchandani [12] performed a survey to determine the incidence of rectovaginal fistula following low anterior resection. A total of 57 patients were reported to have postoperative rectovaginal fistulas. In 53 of the 57 patients (93%) a circular stapled anastomosis had been performed. Many surgeons participating in this study felt that the fistula occurred from inclusion of the vaginal wall in a low stapled anastomosis. Arbman [13] commented that "double stapling technique" was associated with rectovaginal fistula observed after low stapled anastomosis.

In this report, a rectovaginal fistula that occurred following a low, stapled coloanal anastomosis is described. This fistula had a gradual onset 2–6 months after surgery for a large, lymph node-positive rectal cancer. Much evidence was accumulated that suggested that the posterior wall of the vagina was included in the circular stapled anastomosis, thereby causing the fistula. Technical precautions including more adequate mobilization of the rectal stump and intraoperative monitoring of contours of the

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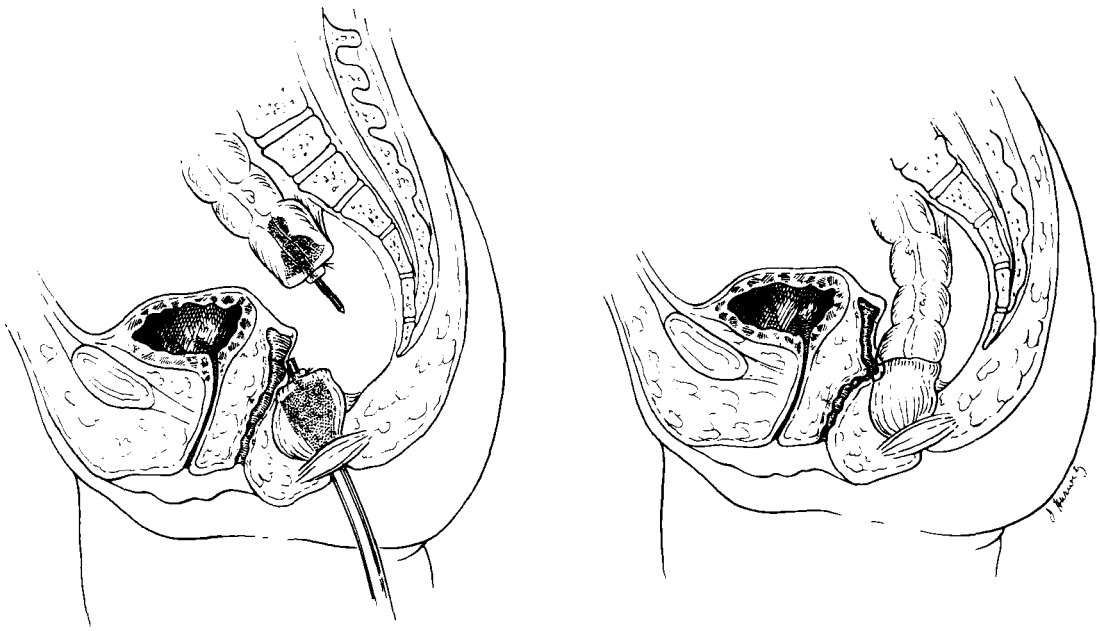

Fig. 1. Incorrect technique. The rectal stump and the posterior vagina have not been separated sufficiently. If the staple gun is angled too far anteriorly, the posterior vagina may be compressed by the anvil and staple gun and partially resected by the circular knife. Although the anastomosis may heal initially the unusual configuration of the rectum and vaginal mucosa entrapped within the colorectal staple line may lead to a late rectovaginal fistula.

posterior wall of the vagina are discussed in order to prevent this complication.

PATIENT PRESENTATION

A 67-year-old woman with moderate obesity complained of bright red blood per rectum of ~6 months duration. She had undergone a prior hysterectomy. By rigid sigmoidoscopy, the lower edge of the cancer was at 7 cm from the anal verge; it was easily palpable by digital rectal examination. By colonoscopy, there were no other lesions within the colorectum. At the time of rectal cancer excision, the rectum was removed down to the internal rectal sphincter. The rectal stump was closed with a 30 mm linear stapler, which was 2 cm below the cancer and directly adjacent to the internal rectal sphincter. Despite the gynecoid pelvis and complete resection of the mesorectum, the patient's obesity and the large size of the primary rectal cancer led to incomplete exposure of the stapled rectal stump. The colon was divided at the junction of sigmoid and descending colon. The inferior mesenteric artery was resected at its origin on the aorta and the inferior mesenteric vein was resected close to its origin on the splenic vein. The descending colon and splenic flexure were released from attachments to the greater omentum and Gerota's fascia covering the left kidney. A purse string suture of 0 gauge monofilament suture was used to secure the anvil of the circular stapler (ILS 33, Ethicon, Cincinnati, OH) within the descending colon. The staple gun was introduced through the middle of the stapled rectal stump, mated with the anvil, and the staple gun fired. Both proximal and distal tissue rings were free of tumor. The distal tissue ring contained stratified squamous epithelium initially thought to be anoderm. The branches of the gastroepiploic vessels were ligated and divided from the stomach preserving the right gastroepiploic vessel but transecting the left as it exited from beneath the lower pole of the spleen. The omentum was transplanted into the pelvis to fill space left by the resection of perirectal fat. The patient had a benign postoperative course and was discharged from the hospital on the 13th postoperative day. Bowel movements were per rectum. Three of 17 nodes were positive with a pathology report showing a 1.5 cm distal margin of resection. The patient did not receive postoperative radiotherapy.

Approximately 6 months postoperatively, the patient returned reporting the discharge of increasing amounts of stool from the vagina. By rectal and vaginal examination, there was a well-circumscribed 1 cm hole through the rectal vaginal septum just above the level of the internal sphincter. By rectal exam there was a distinct cul de sac just above the internal rectal sphincter that was directed anteriorly and ended in the rectovaginal fistula. The fistula tract was continuously epithelialized by mucosa. A small portion of the posterior vaginal wall was absent and the colorectal staple line was in the posterior vaginal wall. No masses were present. Staples were palpable just beneath the vaginal mucosa within the fistula. Pelvic CT

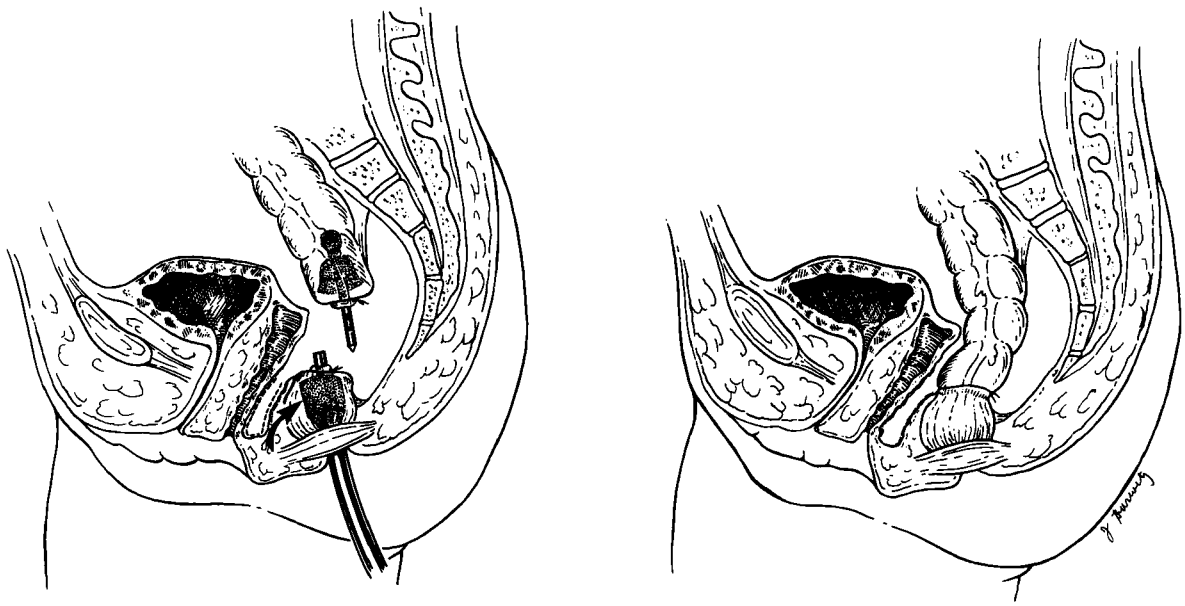

Fig. 2. Correct technique. The dissection has separated the vaginal wall and the rectal stump. The angle of the staple gun is more posterior to keep the vagina out of the circular anastomosis. On the patient presented, a prior hysterectomy had been performed.

scan confirmed that the rectovaginal fistula was at exactly the same level of the stapled anastomosis. The fistula was repaired transvaginally. The mucosa and scar tissue, resected from the fistula site, showed no cancer. After some weeks of fecal leakage through the vagina, the fistula healed and all bowel movements are now per rectum. The patient is 24 months postoperative and has no signs or symptoms of rectal disease.

DISCUSSION

The precise cause of the rectovaginal fistula in this patient cannot be determined. Several factors strongly suggest that the surgical technique involved in the circular stapled anastomosis may have been an important factor in the etiology of this complication. First, the position of the fistula was at exactly the same level as the stapled anastomosis and staples were present within the fistulous tract itself. Second, the abnormal anatomic configuration of the rectum with a prominent, mucosal lined anterior cul de sac entering into the vagina suggests the etiology. Third, the absence of vaginal wall at this site suggests that a portion of this structure was cut away by the knife within the circular stapler. Finally, the delayed onset of symptoms from the rectovaginal fistula may suggest that gradual separation of the anterior portion of the colorectal anastomosis that included the posterior wall of the vagina occurred.

Figures 1 and 2 present the anatomic drawings of incorrect and correct technique for a low-low stapled colorectal anastomosis. Figure 1 shows the incorrect technique. The rectal stump was not dissected clear of the posterior vagina. There is danger that a thinned out posterior vaginal wall may be compressed within the anvil and staple gun and resected as the tissue rings are cut. If this occurs, the vagina will be indented at the colorectal anastomotic site. A simple digital vaginal examination should reveal the entrapment of the piece of posterior vagina. Repositioning of the staple gun may be all that is necessary to avoid this delayed complication.

Figure 2 shows the correct approach. The rectum is dissected free of the posterior wall of the vagina. The angle of the staple gun is such that the vagina is not traumatized by the circular knife blade.

The low-low colorectal anastomosis, routinely performed using a circular stapler without a diverting colostomy, cannot be well visualized in some patients. Complete dissection of the rectal stump from the posterior vagina, a proper angle on the staple gun, a quick check by digital examination of the vagina, plus knowledge of this complication, may prevent a late rectovaginal fistula.

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